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The probability of a successful allocation of ball groups by boxes

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Abstract

Let p = PNn be the probability of a successful allocation of n groups of distinguishable balls in N boxes in equiprobable scheme for group allocation of balls with the following assumption: each group contains m balls and ea,ch box contains not more than q balls from a same group. If q = 1, then we easily calculate p and observe that p → e-m(m-1)/2 α0 as n, N → ∞ such that α = n/N → α0 < ∞. In the case 2 ≤ q we also find an explicit formula for the probability and prove that p → 1 as n, N → ∞ such that α = n/N ≤ α′ < ∞.

Keywords

Cauchy integral, Equiprobable scheme for group allocation of particles, Generating function